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REMARKS/ARGUMENTS

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The Applicants have carefully considered this application in connection with the Examiner's Action and respectfully request reconsideration of this application in view of the foregoing amendment and the following remarks.

The Applicants originally submitted Claims 1-20 in the application. Previously, the Applicants amended Claims 1, 5-6, 9, 13-14 and 17 and added Claims 21 and 22. Presently, the Applicants have neither amended, canceled nor added any claims. Accordingly, Claims 1-22 are currently pending in the application.

I. Rejection of Claims 1, 2, 4, 6, 7, 9, 12, 14, 15, 21 and 22 under 35 U.S.C. §102

The Examiner has rejected Claims 1, 2, 4, 6, 7, 9, 12, 14, 15, 21 and 22 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,346,729 to Liang, et al. (Liang). Independent Claims 1, 9 and 17 currently include the element that a sidewall spacer is located over at least one sidewall of the trench distal the channel region. The Applicants assert that Liang fails to teach this element.

Liang is directed to a process for forming a MOSFET device, featuring a heavily doped source/drain region isolated from a semiconductor substrate, via the use of a thin silicon oxide layer. (Abstract) Liang teaches that its silicon dioxide layers 9 and 9' are positioned in a base of its trench 8a and along a sidewall contiguous (i.e., proximate) with the channel region. More specifically, independent Claim 1 of Liang requires that "an L shaped, thin silicon oxide layer, comprised of a vertical shape, extending vertically downward from the bottom of said lightly doped source/drain segment [i.e., contiguous with the channel region] and a horizontal shape, extending horizontally

from the bottom of said vertical shape of said L shaped thin silicon oxide layer, to the side of an insulator filled shallow trench isolation region.” (Claim 1--Emphasis added) While Liang may teach silicon dioxide layers 9 and 9' positioned in a base of its trench 8a and along a sidewall contiguous with the channel region, it does not teach forming a sidewall spacer over at least one sidewall of the trench distal the channel region.

The Examiner asserts that the spacers 7 of the gate 4 are located directly over the sidewalls of the trench distal (away) from the channel region, and therefore Liang teaches this element. Notwithstanding the fact that the sidewall spacer 7 of Liang is a gate sidewall spacer and not a trench sidewall spacer, it is not located over the sidewall of the trench distal (away) from the channel region. As is very clear from the drawings, the sidewall spacer 7 of Liang is located over the sidewall of the trench proximate (near) the channel region, and not over the sidewall of the trench distal (away) from the channel region as currently claimed. Therefore, Liang fails to teach such an element.

Therefore, Liang does not disclose each and every element of the claimed invention and as such, is not an anticipating reference. Because Claims 2, 4, 6, 7, 12, 14, 15, 21 and 22 are dependent upon Claims 1 and 9, Liang also cannot be an anticipating reference for Claims 2, 4, 6, 7, 12, 14, 15, 21 and 22. Accordingly, the Applicants respectfully requests the Examiner to withdraw the §102 rejection with respect to these Claims.

II. Rejection of Claims 5 and 13 under 35 U.S.C. §103

The Examiner has rejected Claims 5 and 13 under 35 U.S.C. §103(a) as being unpatentable over Liang in view of U.S. Patent No. 6,287,925 B1 to Yu (Yu). As indicated above, independent

Claims 1, 9 and 17 currently include the element that a sidewall spacer is located over at least one sidewall of the trench distal the channel region. As also indicated above, Liang fails to disclose this element. The Applicants assert that Liang further fails to suggest this element. In addition to Liang failing to teach or suggest this element, the Applicants assert that Lu also fails to teach or suggest this element.

Liang also fails to suggest such an element because Liang uses its shallow trench isolation structures 2 to provide its isolation distal the channel region, and therefore would not require a sidewall spacer be located there also. One skilled in the art would not be motivated to take the thin silicon dioxide layers 9, 9b taught by Liang and place it on the sidewall distal the channel without using the present invention as a blueprint. Similarly, one skilled in the art would not be motivated to take the gate sidewall spacer 7 of Liang and place it over at least one sidewall of the trench distal the channel region. Thus, Liang also fails to teach or suggest such an element.

Similar to Liang, Lu fails to teach or suggest the aforementioned claimed element. The Examiner is using Lu for the sole proposition that an oxide layer may be located between the sidewall spacer and the at least one sidewall of the trench. Notwithstanding the merits of the Examiner's position, Lu also fails to teach or suggest the element that a sidewall spacer is located over at least one sidewall of the trench distal the channel region. A teaching or suggestion of placing an oxide layer between the sidewall spacer and the at least one sidewall of the trench is dissimilar to a teaching that a sidewall spacer be located over at least one sidewall of the trench distal the channel region, as required by independent Claims 1, 9 and 17.

Accordingly, the combination of Liang and Lu fails to teach or suggest the invention recited in independent Claims 1, 9 and 17 and their dependent claims, when considered as a whole.

Thus, the combination has failed to establish a prima facie case of obviousness with respect to Claims 1, 9 and 17 and their dependent claims. Claims 5 and 13 are therefore not obvious in view of the combination.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claims 5 and 13 under 35 U.S.C. §103(a). The Applicant therefore respectfully requests the Examiner withdraw the rejection.

III. Rejection of Claims 8 and 16 under 35 U.S.C. §103

The Examiner has rejected Claims 8 and 16 under 35 U.S.C. §103(a) as being unpatentable over Liang. The Applicants established in the §103 rejection above that Liang fails to teach or suggest the element that a sidewall spacer is located over at least one sidewall of the trench distal the channel region, as required by independent Claims 1, 9 and 17. As dependent Claims 8 and 16 include all of the elements of independent Claims 1 and 9, the combination further fails to teach or suggest each and every element of dependent Claims 8 and 16.

In view of the foregoing remarks, the cited reference does not support the Examiner's rejection of Claims 8 and 16 under 35 U.S.C. §103(a). The Applicant therefore respectfully requests the Examiner withdraw the rejection.

IV. Rejection of Claims 1, 3, 9, 11, and 17-20 under 35 U.S.C. §103

The Examiner has rejected Claims 1, 3, 9, 11, and 17-20 under 35 U.S.C. §103(a) as being unpatentable over Liang in view of U.S. Patent No. 5,086,322 to Ishii, et al. (Ishii). The Applicants established in the §103 rejection above that Liang fails to teach or suggest the element that a sidewall

spacer is located over at least one sidewall of the trench distal the channel region, as required by independent Claims 1, 9 and 17. Ishii also fails to teach or suggest this element, and therefore fails to correct the deficiencies of Liang.

The Examiner is using Ishii for the sole proposition that dielectric layers are located over the semiconductor devices and have interconnect structures located therein. Notwithstanding the merits of the Examiner's position, Ishii also fails to teach or suggest the element that a sidewall spacer be located over at least one sidewall of the trench distal the channel region. A teaching or suggestion of dielectric layers located over the semiconductor devices having interconnect structures located therein, is dissimilar to a teaching that a sidewall spacer is located over at least one sidewall of the trench distal the channel region, as required by independent Claims 1, 9 and 17.

Accordingly, the combination of Liang and Ishii fails to teach or suggest the invention recited in independent Claims 1, 9 and 17 and their dependent claims, when considered as a whole. Thus, the combination has failed to establish a prima facie case of obviousness with respect to Claims 1, 9 and 17 and their dependent claims. Claims 1, 3, 9, 11, and 17-20 are therefore not obvious in view of the combination.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claims 1, 3, 9, 11, and 17-20 under 35 U.S.C. §103(a). The Applicants therefore respectfully requests the Examiner withdraw the rejection.

V. Conclusion

In view of the foregoing remarks, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 1-22.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,

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